Notice No.3

Rules and Regulations for the Classification of Special Service Craft July 2016

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Issue date: December 2016

Amendments to	Effective date	Mandatory Instrument
Part 3, Chapter 3, Section 4	1 January 2017	
Part 3, Chapter 4, Section 7	1 January 2017	
Part 3, Chapter 4, Section 11	1 January 2017	X
Part 3, Chapter 5, Sections 6, 8 & 9	1 January 2017	
Part 6, Chapter 2, Section 4	1 January 2017	
Part 6, Chapter 3, Section 1	1 January 2017	
Part 6, Chapter 5, Section 2	1 January 2017	
Part 7, Chapter 2, Section 4	1 January 2017	
Part 7, Chapter 3, Section 1	1 January 2017	
Part 7, Chapter 5, Section 2	1 January 2017	
Part 8, Chapter 3, Section 2	1 January 2017	
Part 8, Chapter 5, Section 2	1 January 2017	

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Part 3, Chapter 3
Control Systems

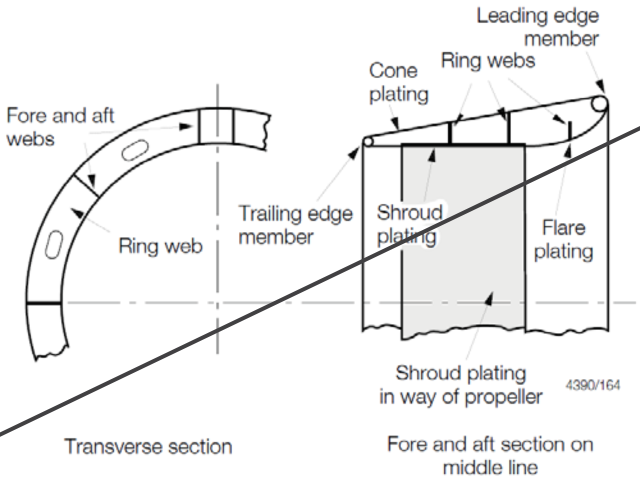
■ *Section 4*
Fixed and steering nozzles, bow and stern thrust units

4.1 General

4.1.1 Fixed and steering nozzles are, in general, to be in accordance with *Pt 3, Ch 13, 3 Fixed and steering nozzles* of the *Rules and Regulations for the Classification of Ships.*

~~4.1.1 The requirements for scantlings for fixed and steering nozzles are given, for guidance only, in *Pt 3, Ch 13, 4.2 Nozzle structure* and *Table 3.4.1 Nozzle construction requirements*.~~

~~4.1.2 The requirements, in general, apply to nozzles with a numeral not greater than 200, *see Table 3.4.1 Nozzle construction requirements*. Nozzles exceeding this value will be specially considered.~~



~~**Figure 3.4.1 Fixed and steering nozzles**~~

~~4.2 Nozzle structure~~

~~4.2.1 For basic scantlings of the structure, *see Table 3.4.1 Nozzle construction requirements*, in association with *Figure 3.4.1 Fixed and steering nozzles.*~~

~~4.2.2 The shroud plating in way of the propeller tips is to be carried well forward and aft of this position, due allowance being made on steering nozzles for the rotation of the nozzle in relation to the propeller.~~

~~4.2.3 Fore and aft webs are to be fitted between the inner and outer skins of the nozzle. Both sides of the headbox and pintle support structure are to be connected to fore and aft webs of increased thickness. For thicknesses, *see Table 3.4.1 Nozzle construction requirements.*~~

~~4.2.4 The transverse strength of the nozzle is to be maintained by the fitting of ring webs. Two ring webs are to be fitted in nozzles not exceeding 2,5 m diameter. Nozzles between 2,5 and 3,0 m in diameter are generally to have two full ring webs and a half-depth web supporting the flare plating. The number of ring webs is to be increased as necessary on nozzles exceeding 3,0 m in diameter. Where ring webs are increased in thickness in way of the headbox and pintle support structure in accordance with *Table 3.4.1 Nozzle construction requirements*, the increased thickness is to be maintained to the adjacent fore and aft web.~~

~~4.2.5 Local stiffening is to be fitted in way of the top and bottom supports which are to be integrated with the webs and ring webs. Continuity of bending strength is to be maintained in these regions.~~

~~4.2.6 Fin plating thickness should be not less than the cone plating, and the fin should be adequately reinforced. Solid fins should be not less than 25 mm thick.~~

~~4.2.7 Care is to be taken in the manufacture of the nozzle to ensure its internal preservation and watertightness. The preservation and testing are to be as required for rudders, *see Pt 3, Ch 3, 2.25 Corrosion protection* and *Pt 3, Ch 3, 2.27 Internal coatings*, and *Table 1.7.2 Trial trip and operational tests* in Chapter 1.~~

~~4.3 Nozzle stock and solepiece~~

~~4.3.1 Stresses, derived using the maximum side load on the nozzle and fin acting at the assumed centre of pressure, are not to exceed the values given in *Table 3.4.1 Nozzle construction requirements*, in both the ahead and astern conditions.~~

~~Table 3.4.1 Nozzle construction requirements~~

Item	Requirement
(1) Nozzle numeral	$N_N = 0{,}01P\delta_p$
(2) Shroud plating in way of propeller blade tips	For $N_N \leq 63$ $t_s = (11 + 0{,}1\ N_N)$ mm For $N_N > 63$ $t_s = (14 + 0{,}052N_N)$ mm
(3) Shroud plating clear of blade tips, flare and cone plating, wall thickness of leading and trailing edge members	$t_p = (t_s - 7)$ mm but not less than 8 mm
(4) Webs and ring webs	As item (3) except in way of headbox and pintle support where $t_W = (t_s + 4)$ mm
(5) Nozzle stock	Combined stresses in stock at lower bearing ≤ 92,7 N/mm^2 (9,45 kgf/mm^2) Torsional stress in upper stock ≤ 62,0 N/mm^2 (6,3 kgf/mm^2)
(6) Solepiece and strut	Bending stresses not to exceed 70,0 N/mm^2 (7,1 kgf/mm^2)
Symbols	
N_N = a numeral dependent on the nozzle requirements P = power transmitted to the propellers, in kW δ_p = diameter of the propeller, in metres t_s = thickness of shroud plating in way of propeller tips, in mm t_p = thickness of plating, in mm t_W = thickness of webs and ring webs in way of headbox and pintle support, in mm	
Note Thicknesses given are for mild steel. Reductions in thickness will be considered for certain stainless steels.	

~~4.4 Ancillary items~~

~~4.4.1 The diameter and first moment of area about the stock axis of coupling bolts and the diameter of pintles, are to be derived from *Pt 3, Ch 3, 2.20 Bolted couplings* and *Pt 3, Ch 3, 2.19 Pintles* respectively.~~

~~4.4.2 Suitable arrangements are to be provided to prevent the steering nozzle from lifting.~~

Existing sub-Sections 4.5 *to* 4.8 *have been renumbered* 4.2 *to* 4.5.

Part 3, Chapter 4
Closing Arrangements and Outfit

■ *Section 7*
Portlights, windows and viewing ports, skylights and glass walls

7.5 Windows

7.5.4 A structural test is to be carried out in order to examine the capability of the frame, and glazing retaining arrangements. A design pressure 4*p*, where *p* is given in *Pt 3, Ch 4, 7.8 Toughened safety glass thickness 7.8.1* is to be applied to the external face of the window~~. Alternatively this test may be carried out using a steel plate in place of the glazing. Ideally the steel plate should be of a suitable reduced thickness to simulate the flexural performance of the glazing.~~, utilising an aluminium alloy plate of appropriate temper and thickness to simulate the flexural response in lieu of the glazing. A full-scale test with actual glazing in place may be acceptable provided that the stresses induced are within allowable limits. Details of the calculations made and testing procedures are to be submitted for review prior to the test. Alternative means of demonstrating adequacy of frame, mullions and the retaining arrangement for the glazing may be specially considered.

■ *Section 11*
Ventilators

11.3 Machinery spaces

11.3.4 Where closing appliances are fitted to ventilators serving emergency generator rooms or ventilation louvres are used for emergency generator rooms, the following requirements are to be applied in addition to the requirements of *Pt 3, Ch 4, 11.3 Machinery spaces 11.3.3*:
(a) Ventilation louvres and closing appliances may either be hand-operated or power-operated (hydraulic/pneumatic/electric) and are to be operable under a fire condition.
(b) Hand-operated ventilation louvres and closing appliances are to be kept open during the normal operation of the vessel. Corresponding instruction notices are to be provided at the location where hand operation is provided.
(c) Power-operated ventilation louvres and closing appliances are to open automatically whenever the emergency generator is starting/in operation. Closed ventilation louvres and closing appliances are acceptable during normal operation of the vessel. In the event of power failure, the default position of the ventilation louvres or closing appliances is to be the open position.
(d) Ventilation openings are to be capable of being operated manually from a clearly marked safe position outside the space where the closing operation can be easily confirmed. The louvre status (open/closed) is to be indicated at this position. Such closing is not to be possible from any other remote position.

Part 3, Chapter 5
Anchoring and Mooring Equipment

■ *Section 6*
Anchor cable

6.1 General

6.1.2 An easy lead of the cables from the windlass to the anchors and chain lockers is to be arranged.

Existing paragraph 6.1.2 *has been renumbered* 6.1.3.

6.6 Cable clench

6.6.1 ~~Provision is to be made for securing the inboard ends of the cables to the structure. This attachment is to have a working strength of not less than 10 per cent of the breaking strength of the chain cable, and the structure to which it is attached is to be adequate for this load. Attention is drawn to the advantages of arranging that the cable may be slipped from an accessible position outside the chain cable locker. The proposed arrangement for slipping the chain cable, if constructed outside the chain locker, must be made watertight.~~ Provision is to be made for securing the bitter end of the chain cable to the ship structure. The fastening for securing the bitter end is to be capable of withstanding a force of not less than 15 per cent and not greater than 30 per cent of the minimum breaking strength of the as fitted chain cable. It is to be provided with suitable means such that, in case of emergency, the chain cable may be easily slipped to sea from an accessible position outside the chain cable locker. Where the mechanism for slipping the chain cable to sea penetrates the chain locker bulkhead, this penetration is to be made watertight.

6.6.2 Alternatively the cable end connection may be accepted where it has been designed and constructed to a recognised National or International Standard.

6.6.3 The cable clench supporting structure is to be adequately stiffened in accordance with the breaking strength of the fastening provided.

6.7 Cable stopping and release arrangements

6.7.1 It is recommended that suitable bow chain stoppers be provided. ~~The scantlings of these chain stoppers are outwith the scope of the Rules, however the structure in way is to be designed with due regard to the applied loading. Support under chain stopping arrangements is to be to the satisfaction of the Surveyor.~~ Where cables pass through stoppers, these stoppers are to be manufactured from ductile material and be designed to minimise the possibility of damage to, or snagging of, the cable. They are to be capable of withstanding without permanent deformation a load equal to 80 per cent of the Rule breaking load of the cable passing over them. The corresponding stresses induced in the supporting structure are not to exceed the allowable values given in *Table 5.6.3 Allowable stresses in chain stopper supporting structure*.

Table 5.6.3 Allowable stresses in chain stopper supporting structure

	Permissible stress N/mm^2
Normal stress	1,00 σ_0
Shear stress	0,58 σ_0
Symbols	
σ_0 = specified minimum yield stress, N/mm^2	

■ *Section 8* Windlass design and testing

8.2 Windlass design

8.2.6 The maximum calculated stress from the load cases stated in *Table 5.8.1 Design load cases for the windlass ~~and chainstopper~~* are not to exceed the permissible stress limits stated in *Table 5.8.2 Permissible stress for design load cases*.

Table 5.8.1 Design load cases for the windlass ~~and chainstopper~~

Load case	Condition	Note
1	Continuous pull	*See Pt 3, Ch 5, 8.2 Windlass design 8.2.1*
2	Overload pull	*See Pt 3, Ch 5, 8.2 Windlass design 8.2.1*
3	Brake holding load	*See Pt 3, Ch 5, 8.2 Windlass design 8.2.1*

■ *Section 9* Structural details

~~9.1 General~~

~~9.1.1 An easy lead of the cables from the windlass to the anchors and chain lockers is to be arranged. Where cables pass over or through stoppers, these stoppers are to be manufactured from ductile material and be designed to minimise the probability of damage to, or snagging of, the cable. They are to be capable of withstanding without permanent deformation a load equal to 80 per cent of the Rule breaking load of the cable passing over them.~~

Existing sub-Sections 9.2 *to* 9.5 *have been renumbered* 9.1 *to* 9.4.

Part 6, Chapter 2 Construction Procedures

■ *Section 4* Joins and connections

4.5 Fillet welds

(*Part only shown*)

Table 2.4.1 Weld factors

Item	Weld Factor	Remarks
(1) General application:		except as required below
Shell envelope boundary, including sea chests and hull penetrations	Full penetration	For hull penetrations, fitted with a flange or other support, equivalent arrangements may be considered.
Watertight plate boundaries	0,34	
Non-tight plate boundaries	0,13	

Longitudinals, frames, beams, and other secondary members to shell, deck or bulkhead plating	0,10 0,13 0,21	 in tanks in way of end connections
Panel stiffeners	0,10	
Overlap welds generally	0,27	
(2) Bottom construction:		
Non-tight centre girder: to keel	0,27	
to inner bottom	0,21	no scallops
Non-tight boundaries of floors, girders and brackets	0,21	in way of 0,2 x span at ends
	0,27	in way of brackets at lower end of main frame
Watertight bottom girders	0,34	
Connection of girder to inner bottom in way of longitudinal bulkheads supported on inner bottom	0,44	
Inner bottom longitudinals, or face flat to floors reverse frames	0,13	
Connection of floors to inner bottom where bulkhead is supported on tank top. The supporting floors are to be continuously welded to the inner bottom	0,44	Weld size based on floor thickness Weld material compatible with floor material

Part 6, Chapter 3
Scantling Determination for Mono-Hull Craft

■ *Section 1*
General

1.28 Arrangements at intersection of continuous secondary and primary members

1.28.2 The cross-sectional areas of connections are to be determined from the load transmitted through each component in association with its appropriate permissible stress.

1.28.3 The load transmitted through the intersection arrangement is to be determined using the design pressure from *Pt 5, Ch 3,3.1 Hull structures* or *Pt 5, Ch 4,3.1 Hull structures* for non-displacement or displacement craft respectively.

1.28.4 Total load, *P*, transmitted to the primary member from the secondary member is to be derived by:

$$\boldsymbol{P} = \frac{\boldsymbol{s}}{\boldsymbol{1000}}\left(\boldsymbol{S} - \frac{\boldsymbol{s}}{\boldsymbol{2000}}\right)\boldsymbol{p} \qquad \text{in kN}$$

where

s = secondary stiffener spacing, mm
S = primary stiffener spacing, m
p = design plating pressure, kN/m^2
P = total load, kN

1.28.5 The arrangement of lug/collar/direct connection to the primary web stiffener determines the load apportioned to each component. The effect on each component of the intersection is to be assessed for shear and direct stress. Where the web stiffener is not connected to the secondary member, the load, *P*, is transmitted through the lug/collar/direct connection.

Existing paragraphs 1.28.2 *to* 1.28.9 *have been renumbered* 1.28.6 *to* 1.28.13.

Part 6, Chapter 5
Special Features

■ *Section 2*
Special features

2.6 Crane support arrangements

2.6.7 The support arrangements for life-saving appliance davits and cranes are, in general, to be in accordance with *Pt 3, Ch 9, 6.5 Support structure for life-saving appliances* of the *Rules and Regulations for the Classification of Ships.*

Part 7, Chapter 2
Construction Procedures

■ *Section 4*
Joins and connections

4.5 Fillet welds

(*Part only shown*)

Table 2.4.3 Weld factors

Item	Weld ~~Factor~~ factor	Remarks
(1) General application:		except as required below
(a) Shell envelope boundary, including sea chests and hull penetrations	Full penetration	For hull penetrations, fitted with a flange or other support, equivalent arrangements may be considered.
~~(a)~~(b) Watertight plate boundaries	0,34	
~~(b)~~(c) Non-tight plate boundaries	0,13	
~~(c)~~(d) Longitudinals, frames, beams, and other secondary members to shell, deck or bulkhead plating	0,10 0,13 0,21	 in tanks in way of end connections
~~(d)~~(e) Panel stiffeners	0,10	
~~(e)~~(f) Overlap welds generally	0,27	
~~(f)~~(g) Longitundinals of the flat-bar type to plating		*See Pt 7, Ch 2, 4.8 Double continuous fillet welding 4.8.4*
(2) Bottom construction in way of holds or tanks:		
(a) Non-tight centre girder:		
• to keel • to inner bottom	0,27 0,21	 no scallops
(b) Non-tight boundaries of:		
• floors, girders and • brackets	0,21 0,27	in way of 0,2 x span at ends in way of brackets at lower end of main frame
Watertight bottom girders	0,34	
Connection of girder to inner bottom in way of longitudinal bulkheads supported on inner bottom	0,44	
(c) Inner bottom longitudinals, or face flat to floors reverse frames	0,13	
(d) Connection of floors to inner bottom where bulkhead is supported on tank top. The supporting floors are to be continuously welded to the inner bottom	0,44	Weld size based on floor thickness Weld material compatible with floor material

Part 7, Chapter 3
Scantling Determination for Mono-Hull Craft

■ *Section 1*
General

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1.28.3 The load transmitted through the intersection arrangement is to be determined using the design pressure from *Pt 5, Ch 3,3.1 Hull structures* or *Pt 5, Ch 4,3.1 Hull structures* for non-displacement or displacement craft respectively.

1.28.4 Total load, P, transmitted to the primary member from the secondary member is to be derived by:

$$P = \frac{s}{1000}\left(S - \frac{s}{2000}\right)p \qquad \text{in kN}$$

where

s = secondary stiffener spacing, mm
S = primary stiffener spacing, m
p = design plating pressure, kN/m^2
P = total load, kN

1.28.5 The arrangement of lug/collar/direct connection to the primary web stiffener determines the load apportioned to each component. The effect on each component of the intersection is to be assessed for shear and direct stress. Where the web stiffener is not connected to the secondary member, the load, P, is transmitted through the lug/collar/direct connection.

Existing paragraphs 1.28.2 *to* 1.28.9 *have been renumbered* 1.28.6 *to* 1.28.13.

Part 7, Chapter 5
Special Features

■ *Section 2*
Special features

2.6 Crane support arrangements

2.6.7 The support arrangements for life-saving appliance davits and cranes are, in general, to be in accordance with *Pt 3, Ch 9, 6.5 Support structure for life-saving appliances* of the *Rules and Regulations for the Classification of Ships.*

■ *Section 2*
Minimum thickness requirements

2.5 Minimum skin reinforcement in sandwich laminates

2.5.1 The minimum amount of reinforcement in single skin laminates, which form the inner and outer skins of sandwich laminates, is given in *Table 3.2.2 Minimum amount of reinforcement in sandwich laminate skins*. ~~The minimum amount of reinforcement is to be modified in accordance with *Pt 8, Ch 3, 2.5 Minimum skin reinforcement in sandwich laminates 2.5.2 to 2.5.4*.~~ The corrected minimum amount of reinforcement, $\boldsymbol{W}_{\mathbf{T}}$, is to be determined from:

$$\boldsymbol{W}_{\mathbf{T}} = \boldsymbol{\omega} \boldsymbol{K}_{\mathbf{L}} \boldsymbol{K}_{\mathbf{V}} \boldsymbol{W}_{\mathbf{min}}$$

where

$\boldsymbol{\omega}$ = Service Type Correction Factor, *see Pt 8, Ch 3, 2.5 Minimum skin reinforcement in sandwich laminates 2.5.2*

$\boldsymbol{K}_{\mathbf{L}}$ = Craft Length Correction Factor, *see Pt 8, Ch 3, 2.5 Minimum skin reinforcement in sandwich laminates 2.5.3*

$\boldsymbol{K}_{\mathbf{V}}$ = Fibre Volume Correction Factor, *see Pt 8, Ch 3, 2.5 Minimum skin reinforcement in sandwich laminates 2.5.4.*

(*Part only shown*)

Table 3.2.2 Minimum amount of reinforcement in sandwich laminate skins based on an assumed fibre content, $\boldsymbol{f}_{\mathbf{c}}$, of 0,5

2.5.2 The Rule minimum amount of reinforcement in *Pt 8, Ch 3, 2.5 Minimum skin reinforcement in sandwich laminates 2.5.1* is to be corrected for craft type, irrespective of the reinforcement being used; the ~~corrected~~ service type correction factor for the minimum amount of reinforcement in the side, bottom, transom, wet-deck, vehicle deck and weather decks is to be determined from:

$$\cancel{\boldsymbol{W}_{\mathbf{T}} = \boldsymbol{\omega} \boldsymbol{W}_{\mathbf{min}}}$$

~~= where~~

~~$\boldsymbol{W}_{\mathbf{T}}$ = Rule minimum amount of reinforcement corrected for craft type, in g/m^2~~

~~$\boldsymbol{W}_{\mathbf{min}}$ = minimum amount of reinforcement given in *Table 3.2.2 Minimum amount of reinforcement in sandwich laminate skins*~~

$\boldsymbol{\omega}$ = Service Type Correction Factor given in *Table 3.2.1 Service type correction factor (ω)*.

2.5.3 The Rule minimum amount of reinforcement in ~~*Table 2.5.1 Bolt pitch requirements in bonded and bolted connections*~~ *Pt 8, Ch 3, 2.5 Minimum skin reinforcement in sandwich laminates 2.5.1* is to be corrected for craft length, irrespective of the reinforcement being used; the ~~corrected amount of reinforcement~~ craft length correction factor is to be determined from:

$$\cancel{\boldsymbol{W}_{\mathbf{Lc}} = \boldsymbol{K}_{\boldsymbol{L}} \boldsymbol{W}_{\mathbf{min}}}$$

~~= where~~

~~$\boldsymbol{W}_{\mathbf{Lc}}$ = Rule minimum amount of reinforcement corrected for craft length~~

~~$\boldsymbol{W}_{\mathbf{min}}$ = minimum amount of reinforcement given in *Table 3.2.2 Minimum amount of reinforcement in sandwich laminate skins*~~

$\boldsymbol{K}_{\mathbf{L}}$ = craft length correction factor
= 1,0-$\boldsymbol{f}_{\mathbf{LS}}$ for $\boldsymbol{L}_{\mathbf{R}}$ ≤15 m
= 1,0 for $\boldsymbol{L}_{\mathbf{R}}$ ≥35 m
Intermediate values of $\boldsymbol{K}_{\mathbf{L}}$ are to be determined by linear interpolation

$\boldsymbol{f}_{\mathbf{LS}}$ = sandwich skin length factor given in *Table 3.2.2 Minimum amount of reinforcement in sandwich laminate skins* for mono-hull craft and *Table 4.2.1 Minimum amount of reinforcement in sandwich laminate skins* in Chapter 4 for multi-hull craft
= 0,0 for all sandwich panels in cargo, pilot and workboat crafts

$\boldsymbol{L}_{\mathbf{R}}$ = Rule length, in metres, as defined in *Pt 3, Ch 1,6.2 Principal particulars*.

2.5.4 The minimum amount of reinforcement is based on an assumed fibre content, $\boldsymbol{f}_{\mathbf{c}}$, of 0,5. Where the fibre content by weight, $\boldsymbol{f}_{\mathbf{c}}$, is greater than 0,5, ~~the required minimum amount of reinforcement~~ the fibre volume correction factor is to be determined from:

$$\cancel{\boldsymbol{W}_{\mathbf{fc}} = \boldsymbol{K}_{\mathbf{V}} \boldsymbol{W}_{\mathbf{0,5}}}$$

~~= where~~

~~$\boldsymbol{W}_{\mathbf{fc}}$ = minimum amount of reinforcement at actual laminate fibre content, in g/m^2~~

~~$\boldsymbol{W}_{\mathbf{0,5}}$ = Rule minimum amount of reinforcement laminate thickness at fibre content, by weight, of 0,5, in g/m^2~~

$\boldsymbol{K}_{\mathbf{V}}$ = fibre volume correction factor for laminates with fibre content, by weight, greater than 0,5

$$= \left(\frac{1 + \frac{\varsigma_F}{\varsigma_R}}{1 + \left(\frac{\varsigma_F}{\varsigma_R}\right)\left(\frac{1 - f_c}{f_c}\right)} \right)^{0,67}$$

$\boldsymbol{f}_{\boldsymbol{c}}$, $\boldsymbol{\varsigma}_{\mathbf{F}}$ and $\boldsymbol{\varsigma}_{\mathbf{R}}$ are as defined in *Pt 8, Ch 3, 1.5 Symbols and definitions 1.5.1*.

■ *Section 2*
Special features

2.6 Crane support arrangements

2.6.7 The support arrangements for life-saving appliance davits and cranes are, in general, to be in accordance with *Pt 3, Ch 9, 6.5 Support structure for life-saving appliances* of the *Rules and Regulations for the Classification of Ships.*

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